Sarcobatus vermiculatus / Distichlis spicata Shrubland
Black Greasewood / Saltgrass Shrubland

ELEMENT CONCEPT

GLOBAL SUMMARY: This association is reported from western Montana to Washington, south to Nevada, Utah and Colorado. Elevation ranges from approximately 600-2300 m. It forms expansive shrublands on broad floodplains along large rivers and streams, and forms an outer ring around playas above the *Distichlis spicata*-dominated center. Flooding is generally intermittent. Substrates are deep, alkaline, saline and generally fine-textured soils with a perennial high water table. However, in southern Colorado's San Luis valley, stands grow between salt flat depressions (playas) on sandy hummocks approximately 1.2 m above the lakebed. The vegetation is characterized by a fairly open to moderate shrub canopy (18-60% cover) dominated by *Sarcobatus vermiculatus* with an herbaceous layer dominated by the rhizomatous graminoid *Distichlis spicata* (10-80% cover). Associated shrubs and dwarf-shrubs may include *Ericameria nauseosa, Gutierrezia sarothrae*, and *Tetradymia canescens*. *Sporobolus airoides* may codominate the graminoid layer, and *Hordeum jubatum* is common in disturbed stands. *Juncus balticus* and *Leymus cinereus* are also present in some stands. The forb layer is generally sparse and composed of species such as *Iva axillaris* and *Ipomopsis* spp. Introduced species may be present to abundant in disturbed stands.

ENVIRONMENTAL DESCRIPTION

USFWS WETLAND SYSTEM: PALUSTRINE

Ouray National Wildlife Refuge Environment: Stands of this shrubland type have become established on the middle and upper floodplain terraces of the Green River and within the channels of tributary drainages. These stands are rarely flooded, as cryptogamic soils have developed under the most mature of them. The soils tend to be silty clay with a mild slope; the aspect is that of the floodplain on which the stand has become established and the slope is usually less than 2%. In the long-abandoned channel west of Sheppard Bottom, the soil is sufficiently dry that a different suite of understory shrubs are present, while along the edge of Wyasket Bottom, only the grass *Hordeum jubatum* is present in the understory. Wildlife use is relatively high, especially small mammals which burrow under these shrubs.

Global Environment: This shrubland association is reported from western Montana to Washington, south into Nevada and east into southeastern Colorado. Elevation ranges from approximately 600-2300 m. It forms expansive shrublands on broad floodplains along large rivers and streams, and forms an outer ring around playas above the *Distichlis spicata*-dominated center. Flooding is generally intermittent. Substrates are deep, alkaline, saline and generally fine-textured soils with a perennial high water table. However, in southern Colorado's San Luis Valley, stands grow between salt flat depressions (playas) on sandy hummocks approximately 1.2 m above the lakebed. Cryptogamic crusts are important on some sites.

VEGETATION DESCRIPTION

Ouray National Wildlife Refuge Vegetation: *Sarcobatus vermiculatus* shrubs classified in this type are usually between one and two m tall, however, one stand near the Fish Hatchery was estimated to be 2-3 m in height. Foliar cover for greasewood shrubs is typically 40-50%, but the very tall stand is estimated at approximately 60% ground cover. In Johnson Bottom, tall, sparse greasewood shrubs are present that share equal foliar cover values with prickly pear cactus. Associated shrubs are short-statured (<1 m) and usually provide less than 10% foliar cover; these include *Ericameria nauseosa, Ericameria parryi, Tetradymia spinosa, Gutierrezia sarothrae,* and *Opuntia polyacantha*. In Brennan Bottom, *Artemisia tridentata* ssp. *tridentata* is the associated shrub. Herbaceous foliar cover can be quite high, up to approximately 50% where greasewood has invaded grasslands dominated by *Distichlis spicata* and/or *Sporobolus airoides*. Normally, herbaceous foliar cover is estimated at less than 5% and includes the exotics *Bromus tectorum, Kochia scoparia*, and *Lepidium latifolium* in addition to *Hordeum jubatum* and *Iva axillaris*. Fire had burned near one sampled stand and *Sarcobatus vermiculatus* was observed producing stump-sprouts. It is unclear whether greasewood shrubs invade established saltgrass and alkali sacaton grasslands or if these grasses expand across greasewood shrublands following fire.

Global Vegetation: The vegetation is characterized by a fairly open to moderate shrub canopy (18-60% cover) dominated by *Sarcobatus vermiculatus* with an herbaceous layer dominated by the rhizomatous graminoid *Distichlis spicata* (10-80% cover). Associated shrubs and dwarf-shrubs may include *Ericameria nauseosa, Gutierrezia sarothrae*, and *Tetradymia canescens*. *Sporobolus airoides* may codominate the graminoid layer, and *Hordeum jubatum* is common in disturbed stands. *Juncus balticus* and *Leymus cinereus* are also present in some stands. The forb

layer is generally sparse and composed of species such as *Iva axillaris* and *Ipomopsis* spp. Introduced species such as *Bromus tectorum, Lepidium latifolium, Lepidium perfoliatum*, and *Bassia hyssopifolia* may be present to abundant in disturbed stands.

Dynamics: *Sarcobatus vermiculatus* and *Distichlis spicata*, like many facultative halophytes, are tolerant of alkaline and saline soil conditions that allow the species to occur in sites with less interspecific competition (Ungar et al. 1969, Branson et al. 1976). *Sarcobatus vermiculatus* is often found on sites with high water tables that are intermittently flooded. Hansen et al. (1995) reported that it can tolerate saturated soil conditions for up to 40 days. *Sarcobatus vermiculatus*-dominated vegetation can occur as a narrow band along a stream, a broad floodplain shrubland, or as a mosaic of communities where composition and density of the shrub and understory species vary with depth to water table, salinity and alkalinity, soil texture, and past land use or disturbance. This shrubland may occur as a band of abrupt concentric rings of vegetation around a salt flat or depression. This visible zonation is caused by the change in dominant species and their relative tolerances to soil salinity and depth to groundwater.

The warm-season grass *Distichlis spicata* is rhizomatous, tolerant of moderate grazing, and its roots resist trampling. Although relatively unpalatable, it can provide valuable winter forage for livestock, if needed. When grazed, *Distichlis spicata* generally increases because of reduced competition from other less grazing-tolerant species. If grazed heavily, *Distichlis spicata* will decline and may be replaced by less desirable warm-season grasses such as tumblegrass (*Schedonnardus paniculatus*), or *Hordeum jubatum* (Costello 1944b, Jones and Walford 1995). Weeds are generally not a problem because few grow well in saline soils. However, severely disturbed sites are susceptible to invasion by introduced species such as *Bromus tectorum, Lepidium latifolium, Lepidium perfoliatum*, and *Bassia hyssopifolia* (Franklin and Dyrness 1973).

MOST ABUNDANT SPECIES

Ouray National Wildlife Refuge

Stratum	**Species**
SHORT SHRUB	*Sarcobatus vermiculatus, Ericameria nauseosa, Tetradymia spinosa, Gutierrezia sarothrae*
HERBACEOUS	*Distichlis spicata, Sporobolus airoides, Hordeum jubatum, Bromus tectorum, Iva axillaris, Lepidium latifolium*

Global

Stratum	**Species**
SHORT SHRUB	*Ericameria nauseosa*
SHORT SHRUB	*Gutierrezia sarothrae*
SHORT SHRUB	*Sarcobatus vermiculatus*
GRAMINOID	*Distichlis spicata*
GRAMINOID	*Hordeum jubatum*
GRAMINOID	*Sporobolus airoides*

CHARACTERISTIC SPECIES

Ouray National Wildlife Refuge

Species

Sarcobatus vermiculatus, Ericameria nauseosa, Distichlis spicata, Gutierrezia sarothrae, Hordeum jubatum, Bromus tectorum, Lepidium latifolium

Global

Species

Distichlis spicata, Sarcobatus vermiculatus

OTHER NOTEWORTHY SPECIES

Ouray National Wildlife Refuge

Stratum	**Species**
N/A	

Global Stratum	Species
GRAMINOID	*Bromus tectorum*
FORB	*Lepidium latifolium*
FORB	*Lepidium perfoliatum*

GLOBAL SIMILAR ASSOCIATIONS:
Sarcobatus vermiculatus Shrubland (CEGL001357)--similar but no herbaceous layer.
Sarcobatus vermiculatus / Ericameria nauseosa Shrubland (CEGL001362)--also occurs on playa in NV.
Sarcobatus vermiculatus / Leymus cinereus Shrubland (CEGL001366)--occurs in similar habitats those not as saline.
Sarcobatus vermiculatus / Sporobolus airoides Sparse Vegetation (CEGL001368)--occurs in similar habitats those not as
saline.
Sarcobatus vermiculatus / Elymus elymoides Shrubland (CEGL001372)--occurs in similar habitats those not as saline.
Sarcobatus vermiculatus / Distichlis spicata - (Puccinellia nuttalliana) Shrub Herbaceous Vegetation (CEGL002146)--similar but known from the northern Great Plains and not flooded.

SYNONYMY:
Sarcobatus vermiculatus / Distichlis stricta Association (Daubenmire 1970)
Sarcobatus vermiculatus - Distichlis stricta association (Franklin and Dyrness 1973)
Sarcobatus vermiculatus - Distichlis stricta Habitat Type (Mueggler and Stewart 1980)
Sarcobatus vermiculatus - Distichlis spicata Community (Crawford 2001)
Sarcobatus vermiculatus - Distichlis spicata Association (Kittel et al. 1999)

CLASSIFICATION COMMENTS

Ouray National Wildlife Refuge: Understory species vary across the Refuge, depending on the location of the particular greasewood stand. Rabbitbrush is common on the edge of the existing floodplain, but a long abandoned floodplain channel (actually crossed by SH 88) supports a variety of drier shrubs including snakeweed, green sage, and spiny sagebrush. In Brennan Flats, big sagebrush is associated with greasewood. A greasewood stand on the edge of Wyasket Bottom contains only foxtail barley in the understory. The sparse greasewood stand in Johnson Bottom is difficult to classify, since foliar cover values are equal for greasewood and prickly-pear cactus. For mapping purposes, this stand may require application of a special attribute code.

Global Comments: N/A

ELEMENT DISTRIBUTION

Ouray National Wildlife Refuge Range: *Sarcobatus vermiculatus* is a widespread shrub within the Refuge. However, the association with *Distichlis spicata* and *Ericameria* spp. occurs only on the floodplain of the Green River, usually on the second or third terrace. A variety of shrub species are present with greasewood in the long-abandoned channel of Sheppard Bottom, but *Gutierrezia sarothrae* is most abundant in the stand, following greasewood. Sparse stands of greasewood in association with saltbush species and species of grasses are described as the *Sarcobatus vermiculatus - Atriplex gardneri* Shrubland.

Global Range: This shrubland association occurs throughout much of the interior West from western Montana to Washington, south to Nevada, Utah and Colorado.

Nations: US
States/Provinces: CO ID MT NV? OR UT WA WY
TNC Ecoregions: 10:C, 19:C, 20:C, 6:C
USFS Ecoregions: 341C:CC, 342C:CC
Federal Lands: USFWS (Ouray)

ELEMENT SOURCES

Identifier: CEGL001363 **Confidence:** 1 **Conservation Rank:** G4
REFERENCES: Branson et al. 1976, Costello 1944b, Crawford 2001, Daubenmire 1970, Franklin and Dyrness 1973, Hansen et al. 1995, Jones and Walford 1995, Kittel et al. 1999, Mueggler and Stewart 1980, Ungar et al. 1969, Von Loh 2000